

Serial No. 09/497,865 Page 2

In the Claims:

Kindly substitute the following for pending Claim 1.

1. (Twice Amended) An antenna for communication with an equatorial satellite constellation, the antenna being for use on a commercial satellite terminal, comprising:
- a generally circular rotating plate for mechanically scanning for wave signals in the azimuth direction;
- a plurality of radiation elements positioned on said circular plate for electronically scanning for wave signals in elevation; and
- a multiplexor associated with each of said plurality of radiation elements for consolidating the individual wave signals received at each of said plurality of radiation elements to an analog bit stream;
- an analog to digital converter for converting said analog bit stream to a digital bit stream;
- circuitry for forming multiple digital beams from said digital bit stream; and
- a digital receiver for converting said digital beams into an information signal;
- wherein the antenna is able to lock onto a second equatorial satellite in the constellation before locking off a first equatorial satellite.

Kindly cancel claim 6 without prejudice.

Kindly substitute the following for pending Claim 7.

7. (Twice Amended) A phased array antenna for communication with an equatorial satellite constellation, comprising:
- a rotating plate for mechanically scanning for a wavefront of wave signals in an azimuth direction;
- a plurality of radiation elements positioned on said rotating plate for receiving a plurality of individual waves;
- apparatus for positioning said radiation elements such that a wavefront of an intended signal will be in alignment with a major axis of said plurality of radiation elements;

Serial No. 09/497,865 Page 3

a multiplexer device in communication with each of said plurality of radiation elements for converting said plurality of received individual waves into an analog bit stream;

c2
concl.

an analog to digital converter for converting said analog bit stream to a digital bit stream;

a device for forming multiple digital beams from said digital bit stream; and

a digital receiver for processing said multiple digital beams;

wherein the antenna is able to lock onto a second equatorial satellite in the constellation before locking off a first equatorial satellite.

Kindly substitute the following for pending Claim 13.

13. (Amended) A method for forming multiple beams at a commercial satellite antenna comprising:

providing a plurality of radiation elements on a surface of said commercial satellite antenna for receiving a plurality of individual wave signals;

rotating said plurality of radiation elements such that a wavefront of said plurality of individual wave signals is in alignment with a major axis of said plurality of radiation elements;

consolidating said plurality of wave signals into a single analog signal;

forming multiple beams from said single analog signal; and

transmitting said multiple beams to a plurality of satellites in an equatorial satellite constellation;

whereby the antenna is able to lock onto a second equatorial satellite in the constellation before locking off a first equatorial satellite.

Kindly substitute the following for pending Claim 14.

14. (Amended) The method of claim 13, further comprising:

converting said single analog signal to a digital bit stream; and

forming multiple digital beams from said digital bit stream.

Serial No. 09/497,865 Page 4

C3
conct). [Kindly substitute the following for pending Claim 15.]

15. (Amended) The method of claim 14, further comprising:
utilizing FFT techniques to form said multiple digital beams to provide for
satellite retrodirectivity.

[Kindly substitute the following for pending Claim 16.]

16. (Amended) The method of claim 14, further comprising:
processing said multiple digital beams prior to transmitting.

C4
Subj
DY [Kindly substitute the following for pending Claim 21.]

21. (Amended) A phased array antenna for communication with an equatorial satellite constellation, comprising:

a rotating plate for electronically scanning for a wavefront of wave signals in elevation and for mechanically scanning for said wavefront of wave signals in an azimuth direction;

a plurality of elongated radiation elements positioned on said rotating plate for receiving a plurality of individual waves, each of said plurality of radiation elements having a major axis and a minor axis;

apparatus associated with each of said plurality of radiation elements for consolidating the wave signals received at each of said plurality of radiation elements into a first bit stream; and

a multiple beam former for forming multiple beams from said first bit stream.

C5
Stob
DY [Kindly substitute the following for pending Claim 30.]

30. (Amended) A method of communicating with an equatorial satellite constellation, comprising:

providing a plurality of generally parallel radiation elements on a surface of a commercial satellite antenna;

rotating said satellite antenna such that a wavefront of a plurality of individual wave signals is in alignment with a major axis of said plurality of radiation elements;

consolidating said plurality of wave signals into a single bit stream;

Serial No. 09/497,865 Page 5

*E5
cont.*

forming multiple beams from said single bit stream; and
transmitting said multiple beams to a plurality of satellites in the equatorial satellite constellation.

Kindly substitute the following for pending Claim 37.

37. (Amended) A commercial satellite terminal for communication with an equatorial satellite constellation comprising:

an antenna including:

a generally circular rotating plate for mechanically scanning for wave signals in the azimuth direction;

a plurality of elongated radiation elements positioned generally parallel to one another on said circular plate for electronically scanning for wave signals in elevation;

a multiplexer associated with each of said plurality of radiation elements for consolidating the individual wave signals received at each of said plurality of radiation elements to a first bit stream; and

a multiple beam former for forming multiple beams from said first bit stream.

*Ch
Sub
D*